Echo Femoral Hip System

Hip Fracture Surgical Technique

Endo II Uni-polar Acetabular Component

RingLoc Bi-polar Acetabular Component

ZIMMER BIOMET

Moving You Forward.™

One Surgeon. One Patient.

Over 1 million times per year, Biomet helps one surgeon provide personalized care to one patient.

The science and art of medical care is to provide the right solution for each individual patient. This requires clinical mastery, a human connection between the surgeon and the patient, and the right tools for each situation.

At Biomet, we strive to view our work through the eyes of one surgeon and one patient. We treat every solution we provide as if it's meant for a family member.

Our approach to innovation creates real solutions that assist each surgeon in the delivery of durable personalized care to each patient, whether that solution requires a minimally invasive surgical technique, advanced biomaterials or a patient-matched implant.

When one surgeon connects with one patient to provide personalized care, the promise of medicine is fulfilled.

Echo Femoral Hip System

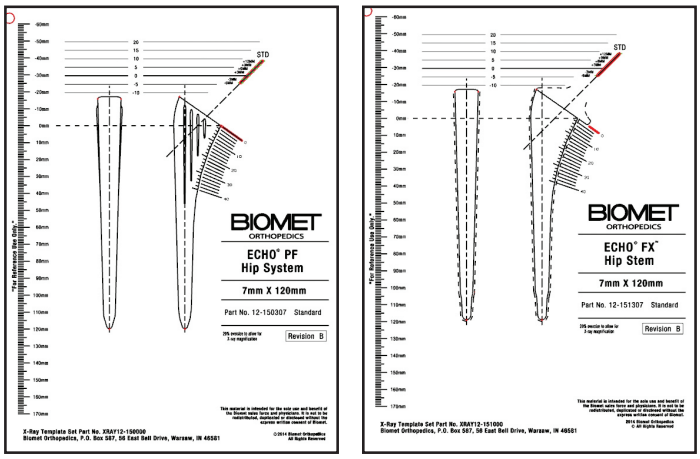


Figure 1

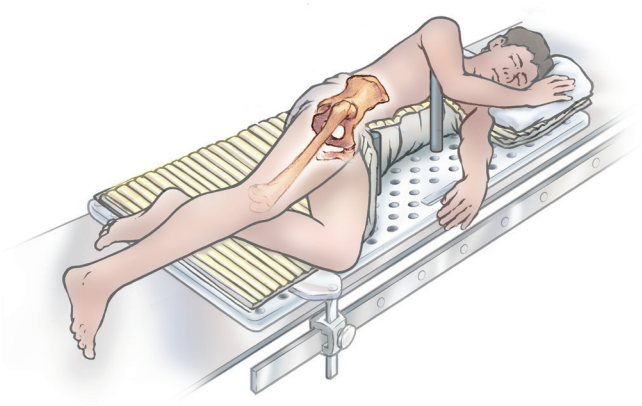


Figure 2

Three Stem Variations

Echo FX Stem: Forged cobalt alloy cemented or press-fit stem

Echo PF Stem: Forged titanium alloy grit blasted press-fit stem

Echo Bi-Metric Stem: PPS forged titanium alloy **Note**: A separate surgical technique is available for the Echo Bi-Metric stem option.

Any one of the Echo Hip System components may be utilized in total or hemi hip arthroplasty.

The Echo Hip System was designed and developed in conjunction with Michael Berend, M.D.; Christian Christensen, M.D.; Philip Faris, M.D.; Kevin Garvin, M.D.; Douglas Jessup, M.D.; Michael Keating, M.D.; John Meding, M.D. and Jeffery Mokris, M.D.

This hip facture surgical technique is utilized by Kevin Garvin, M.D. Biomet as the manufacturer of this device. Each surgeon is responsible for determining the appropriate device and technique to utilize on each individual patient.

Preoperative Planning

Preoperative templates are provided for determining optimal component size, femoral neck resection level and appropriate neck length (Figure 1). Radiographs should include a full A/P (anteroposterior) view of the pelvis including the proximal one-half of both femurs and a lateral view of the proximal half of the affected femur.

Surgical Approach

The Echo Hip System is designed to accommodate any standard approach based on the surgeon's experience or personal preference. Adequate exposure that allows bony landmark visualization, component alignment and thorough soft tissue assessment can contribute to more successful results (Figure 2).

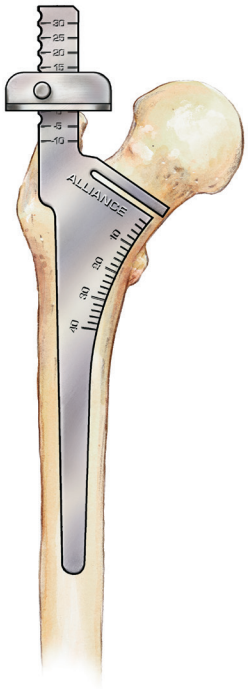


Figure 3

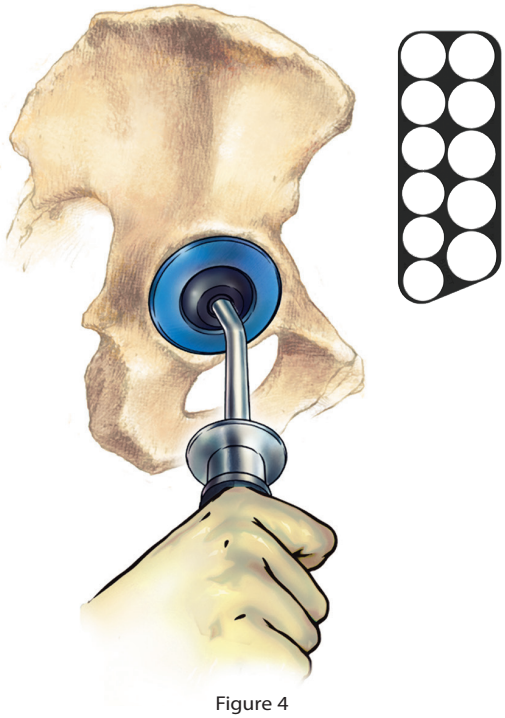


Figure 4

Resecting the Femoral Head

A broach/provisional or the femoral resection template may be used as a template for the femoral resection level (Figure 3). If fractured, remove the head/neck fragment with a corkscrew.

Gauge Acetabulum

Sizing of the acetabulum is conducted by using provisional shells that are attached to the gauge handle (Figure 4). These provisionals are utilized for both bi-polar and uni-polar applications. You may also utilize the femoral head gauge to determine the diameter of the resected femoral head.

Note: Please refer to the product listing for femoral head trial size options.

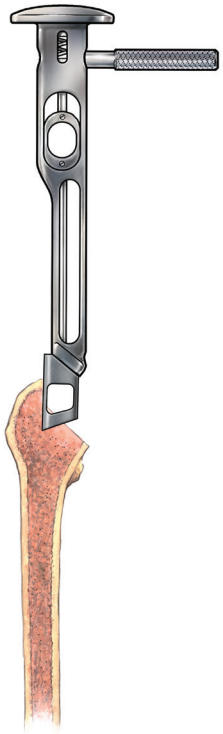


Figure 5

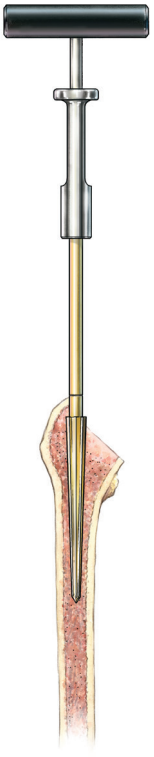


Figure 6

Opening Femoral Canal

A hollow chisel or starter reamer can be used to open the femoral canal (Figures 5 and 6).

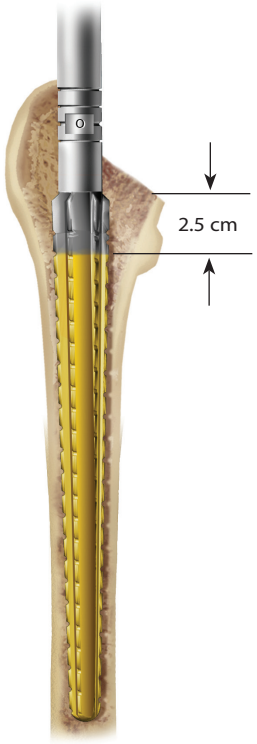


Figure 7

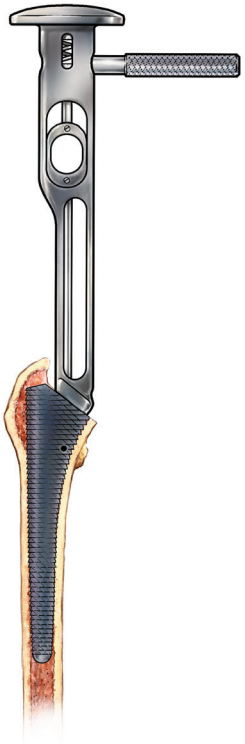


Figure 8

Reaming the Distal Femur

Note: Fully toothed broaches are recommended with the Echo fracture system. If using fully toothed broaches, the reaming step may be skipped. Partially toothed broaches can be used, but care should be taken when reaming to ensure the reamer is advanced 2.5 cm (approximately 1 inch) past the medial resection level of the femur, relative to the level of gold nitride coating (Figure 7).

Tapered side cutting reamers are introduced in a sequential fashion beginning with the smallest size reamer and progressing until the cutting flutes encounter resistance from the endosteal wall. The reamer is advanced until the gold portion is beyond the level of the planned medial resection (Figure 7).

Broaching the Proximal Femur

Begin broaching with the fully toothed broach that is at least 2 mm smaller than the last reamer size used. It is important that the broach is oriented so that the medial/lateral axis of the broach is parallel with the anatomic medial/lateral axis of the femoral neck. A sequentially larger broach is used until ideal or templated size is reached.

Example: Ream 12 mm, sequentially broach to 12 mm (Figure 8).

Note: The black RPP broaches must be used in Echo FX and PF fracture applications.

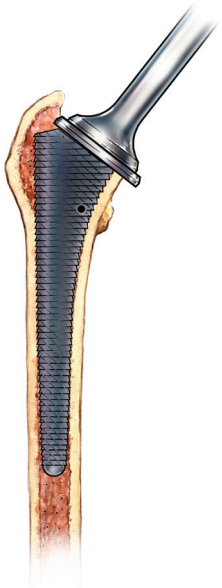


Figure 9

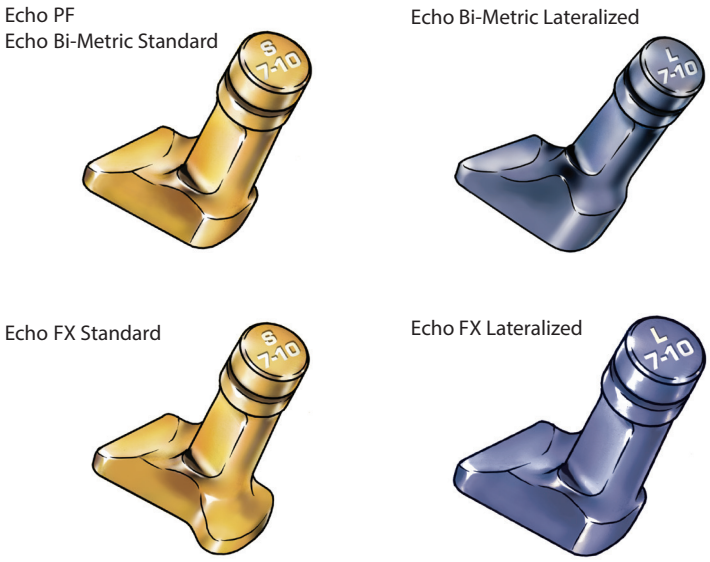


Figure 10

Planing the Calcar

With the broach/provisional properly seated, the calcar is planed flush by using the Exact calcar planer (Figure 9).

Note: Fully seat the spring loaded plunger over the broach post prior to powering-up and advancing the body and blade of the planer.

Trunnion Selection

To perform the trial reduction with the indwelling broach, attach the Exact Echo neck trunnion onto the broach post. The neck trunnion for the Echo PF stem is offered in standard (S) offset only. The neck trunnions for the Echo Bi-Metric and Echo FX stems are offered in standard (S) and lateralized (L) offset. These trunnions are color coded to represent offset. The gold trunnions represent standard offset while the black represents lateralized offset. The Exact trunnions are sized to correspond to the final implant. The stem size is clearly marked on the top of the trunnion (Figure 10).

Figure 11

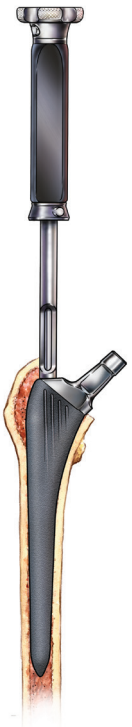


Figure 12

For Endo II

With the appropriate neck trunnion in place, select the desired Endo II trial head and provisional shell components. Biomet offers five neck length options (-6, -3, Standard, +3, and +6 mm) for use with the Endo II uni-polar system. Assemble as shown (Figure 11).

Note: The Endo II trial head will snap into the apical hole of the desired provisional shell component. A trial reduction is carried out to ensure that proper leg length and joint stability have been achieved.

For RingLoc Bi-polar

With the appropriate neck trunnion in place, select the appropriate RingLoc bi-polar trial head and provisional shell components. Biomet offers seven neck length options (-6, -3, Standard, +3, +6, +9 and +12 mm) for use with the RingLoc bi-polar system. Assemble as shown (Figure 11).

Note: Align the circumferential flat on the RingLoc bi-polar trial head with the desired provisional shell component. The bi-polar head will articulate within the provisional shell component. A trial reduction is carried out to ensure that proper leg length and joint stability have been achieved.

Echo Cementless Stem Insertion

Select either the Echo PF, Echo FX or the Echo Bi-Metric implant that corresponds to the last size reamer and broach used.

Example: Ream and broach to a 12 mm. Implant a size 12 mm Echo PF or Bi-Metric stem. Attach the implant to the inserter tool and impact until the stem stops advancing. Do not attempt to seat the stem further if it fails to advance (Figure 12).

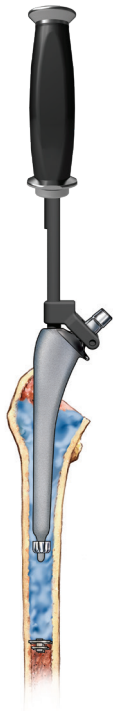


Figure 13

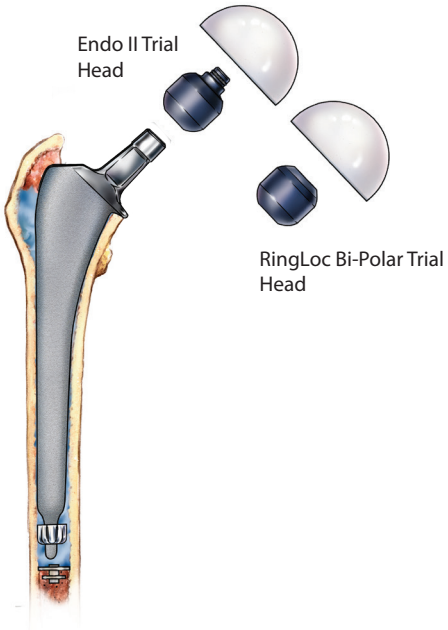


Figure 14

Echo FX Cemented Stem Insertion

Select the Echo FX stem that is a minimum of 2 mm smaller than the final reamer and Exact Alliance RPP broach used. Undersizing the component 2 mm will provide for a 2 mm cement mantle (1 mm per side). Undersizing by 4 mm will provide a 4 mm mantle (2 mm per side).

Example: Ream and broach to 12 mm. Select a size 9 mm Echo Hip Fracture stem to provide a 1.5 mm mantle per side. A distal cement restrictor is placed in the canal to allow a 2 cm cement column below the tip of the stem. Cobalt cement is injected into the canal in a retrograde fashion and pressurized. Slide the appropriately sized distal centralizer on to the stem.

Note: Echo FX stems accept any size distal tip centralizer and may be matched to prepared canal size. The stem is inserted to a fully seated position, and extraneous cement is removed. Once cement hardening is achieved, a final trial reduction may be done (Figure 13).

Final Trial Reduction

With the implant in place, a second/final trial reduction may be performed utilizing Endo II or bi-polar trial heads. Select the appropriate trial components and assemble as shown in Figure 14.

Endo II Uni-polar *In Vivo* Assembly

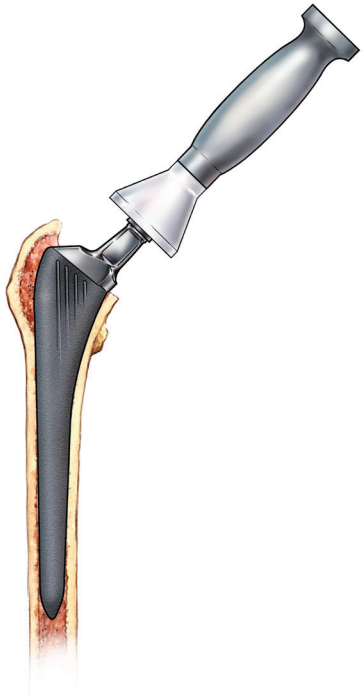


Figure 15

Figure 16

Seating the Taper on the Stem

After determining the desired neck length, dry the femoral component neck trunnion and select the appropriate Endo II taper insert (Figure 15). Seat the appropriate insert with a head driver.

Note: The taper insert may be used on any Biomet type 1 taper femoral component when implanting an Endo II uni-polar head.

Seating the Head on the Taper Adaptor

Select the desired Endo II uni-polar head and secure it onto the taper insert with a twisting motion. Impact the Endo II head with a head driver (Figure 16).

RingLoc Bi-polar *In Vivo* Assembly

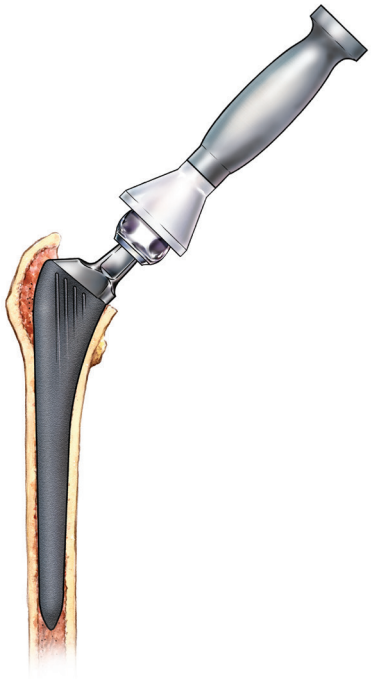


Figure 17

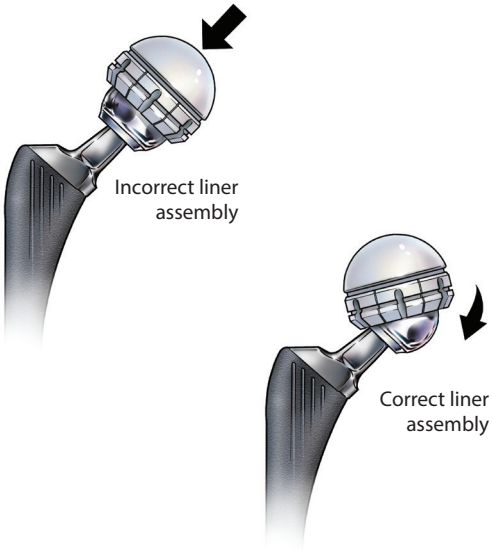


Figure 18

Impacting the Femoral Head

Select the appropriate 28 mm femoral head that corresponds to the neck length determined at final trial reduction and impact with the head driver (Figure 17).

Assembling the Polyethylene Liner

Lever the polyethylene liner from superior to inferior onto the assembled femoral head until a “click” is heard (Figure 18).

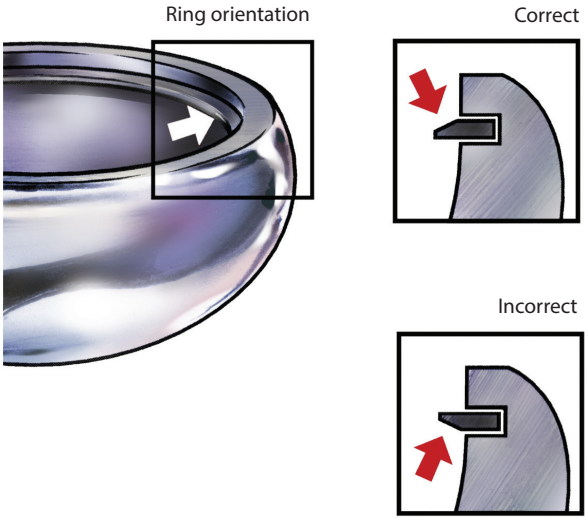


Figure 19

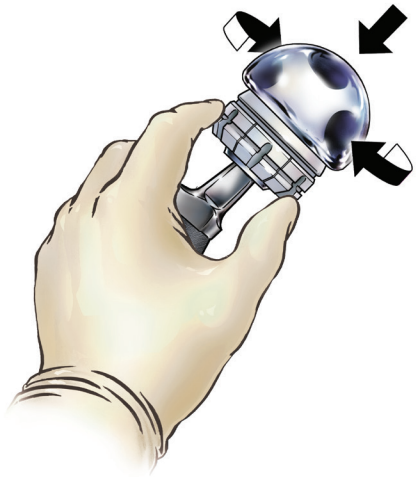


Figure 20

Positioning the Metal Ring

Each shell is packaged with the metal ring in position. Before assembling the metal shell on the polyethylene liner, ensure the metal ring is intact and moves in a circular motion within the groove of the metal shell. Make sure that the chamfer on the metal ring is facing toward the opening of the metal shell and is visible when looking into the shell (Figure 19).

Assembling the Metal Shell

Hold the liner steady against the femoral head. Twist and push the metal shell onto the liner. The metal shell will be fully seated when the metal ring engages the locking groove of the polyethylene liner (Figure 20).

RingLoc Bi-polar *Back Table* Assembly

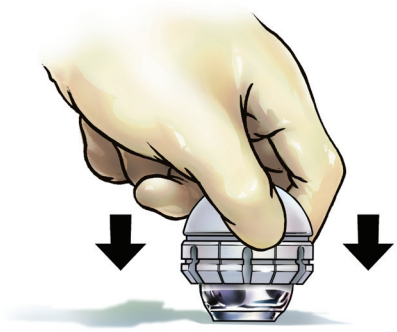


Figure 21

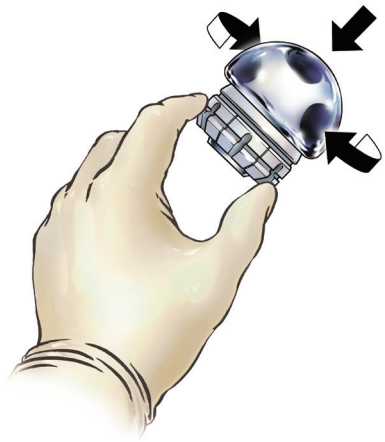


Figure 22

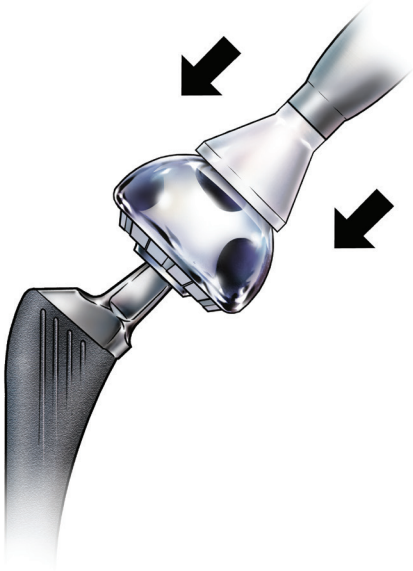


Figure 23

Assembling the Polyethylene Liner onto the Femoral Head

Place the correct femoral head on a sterile field. Using even pressure, apply the polyethylene liner over the femoral head until a "click" is heard (Figure 21).

Assembling the Metal Shell

While holding the liner steady, twist and push the shell onto the liner (Figure 22).

Assembling the Metal Shell onto the Femoral Stem

Impact the bi-polar onto the inserted femoral component as a unit with several taps (Figure 23).

Disassembly of RingLoc Bi-polar

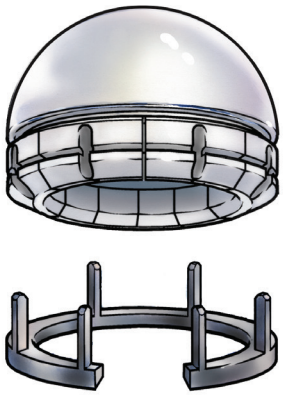


Figure 24

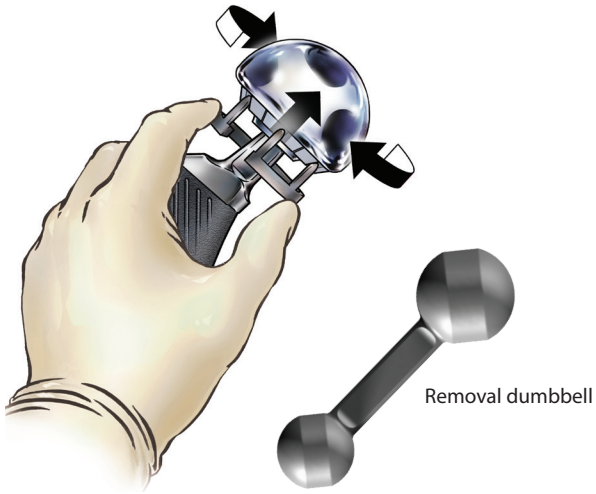


Figure 25

Engagement of Liner Removal Tool

There are eight removal tools which are marked with the corresponding cup sizes that they will remove. Choose the correct size tool that matches the cup/liner size to be disassembled (Figure 24).

Position the appropriately sized removal tool over the taper and push it into the slots located on the periphery of the liner (Figure 24).

Insert the removal tool into the polyethylene liner until it is fully flush with the face of the liner.

Note: In any instance wherein a liner engages the Ringloc locking ring and the liner is subsequently removed or replaced, the Ringloc locking ring should be replaced with a new ring.

Removal of Metal Shell

Hold the removal tool against the liner (do not allow the tool to rotate). Twist and pull the metal shell away from the liner. The tool must remain flush with the liner while the shell is being removed (Figure 25).

Removal of Liner

Disengage the removal tool and lever the polyethylene liner away from the femoral head.

Note: If the liner and shell have been assembled without the head, use the bi-polar liner removal dumbbell (31-165341), in place of the stem and head, to pull on for separation.

Disassembly of the Endo II Uni-polar Taper Insert and Shell

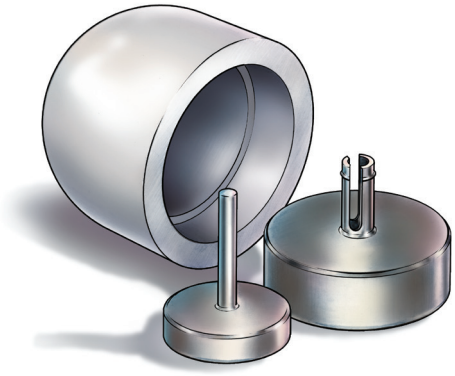


Figure 26

Figure 27

Figure 28

Removal of Liner (cont.)

Place the assembled Endo II uni-polar head and taper insert over the separator. Resistance will be felt due to the tines that extend proximally on the separator. Warning: Do not attempt this if the plunger is assembled to the separator.

Using hand pressure only, push the head downward until an audible "click" is heard. The taper insert should sit flush on the base of the separator (Figure 27).

Lower the separator onto the plunger while lining the plunger post up with the hole on the bottom of the separator (Figure 28).

Note: The base of the separator will stand several millimeters proud because the taper is still set.

Figure 29

Figure 30

Figure 31

Removal of Liner (cont.)

Carefully place the dome over the Endo II head, plunger and separator (Figure 29).

Using a mallet, impact the plate on the top of the dome. This will enable the tines that have been pushed through the Endo II taper insert to force the taper with the Endo II head to break (Figure 30).

Remove the dome. Remove the head from the taper insert (Figure 31).

Note: Reuse of the head is not recommended.

Remove the separator and the taper insert from the post on the plunger.

Note: Reuse of the taper insert is not recommended.

Using Kocher forceps, squeeze the tines on the end of the separator together and slide the tapered insert off.

Implants

Echo FX Cobalt Chromium Femoral Components

Product	Part Number	Description	Size
	12-151307 12-151309 12-151311 12-151313 12-151315 12-151317	Echo FX Femoral Stem - Standard Offset	7 mm 9 mm 11 mm 13 mm 15 mm 17 mm
	12-151409 12-151411 12-151413 12-151415 12-151417	Echo FX Femoral Stem - Lateralized Offset	9 mm 11 mm 13 mm 15 mm 17 mm

Echo PF Press-fit Titanium Femoral Components

Product	Part Number	Description	Size
	12-150307 12-150308 12-150309 12-150310 12-150311 12-150312 12-150313 12-150314 12-150315 12-150316 12-150317	Echo PF Press-fit Femoral Stem - Standard Offset	7 mm 8 mm 9 mm 10 mm 11 mm 12 mm 13 mm 14 mm 15 mm 16 mm 17 mm

Echo Femoral Hip System

Implants

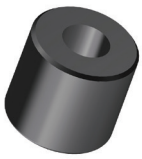
Ringloc Bi-Polar Acetabular Components

Product	Part Number	Description	Size
	11-165206 11-165208 11-165210 11-165212 11-165214 11-165216 11-165218 11-165220 11-165222 11-165224 11-165226 11-165228 11-165230 11-165232 11-165236 11-165240 11-165244	RingLoc Bi-Polar	28x41 mm 28x42 mm 28x43 mm 28x44 mm 28x45 mm 28x46 mm 28x47 mm 28x48 mm 28x49 mm 28x50 mm 28x51 mm 28x52 mm 28x53 mm 28x54 mm 28x56 mm 28x58 mm 28x60 mm

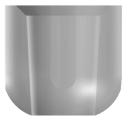
ENDO II CoCr Femoral Head

Product	Part Number	Description	Size
	12-139006 12-139008 12-139010 12-139012 12-139014 12-139016 12-139018 12-139020 12-139022 12-139024 12-139026 12-139028 12-139030 12-139032 12-139036 12-139040 12-139044	ENDO II CoCr Femoral Head	41 mm 42 mm 43 mm 44 mm 45 mm 46 mm 47 mm 48 mm 49 mm 50 mm 51 mm 52 mm 53 mm 54 mm 56 mm 58 mm 60 mm

ENDO II Taper Insert

Product	Part Number	Description	Size
	139245 139246 139247 139248 139249	ENDO II Taper Insert	+6 mm (T1) +3 mm (T1) 0 mm (T1) (-)3 mm (T1) (-)6 mm (T1)

PMMA Distal Stem Positioner

Product	Part Number	Description	Size
	162656 162640 162657 162641 162658 162642 162659 162643 162660 162644 162661 162646	Centralizer Distal Positioner	9 mm 10 mm 11 mm 12 mm 13 mm 14 mm 15 mm 16 mm 17 mm 18 mm 19 mm 20 mm

Product	Part Number	Description	Size
—	595609	Metal Outer (2 Required)	4.5 inch

Tray 1

Product	Part Number	Description	Size
—	595602	Plastic Tray One with Lid	—
	X31-400027 X31-400028 X31-400029 X31-400030 X31-400031 X31-400032 X31-400033 X31-400034 X31-400035 X31-400036 X31-400037	Exact Alliance Reamer	7 mm 8 mm 9 mm 10 mm 11 mm 12 mm 13 mm 14 mm 15 mm 16 mm 17 mm

Echo Femoral Hip System

Instruments

Tray 2

Product	Part Number	Description	Size
—	595603	Plastic Tray Two with Lid	—
	428195	R/B Starter Reamer Tapered	—
	31-112102	Impact Initial Canal Probe	—
	31-473192	Troch Reamer	—
	31-473190	Troch Router	—
	31-555583	Lateralizing Rasp Reamer	—
	X31-400001	Stem Removal Tool Adapter	—
	X31-400061	Slap Hammer	—
	31-473620	Reamer T-Handle	—
	31-473191	Reamer T-Handle Threaded	—
	31-555605	Cork Screw Attachment for T-Handle	—
	31-555617	Cork Screw Attachment for Cinch Handle (31-55611)	—

Instruments (cont.)

Tray 2 (cont.)

Product	Part Number	Description	Size
	31-400000	Bio-Plug Bone Plug Inserter	—
	31-400100	M Plug Bone Plug Inserter	—
	31-555610	Exact Slotted Stem Inserter	—
	31-555612	Cinch Femoral Inserter with Fork	—
	31-555613	Cinch Femoral Inserter Bullet Tip	—
	31-555614	Cinch Femoral Inserter Slotted Bullet Tip	—
	31-555616	Cinch Femoral Inserter Slotted / Threaded	—

Tray 3

Product	Part Number	Description	Size
—	595604	Plastic Tray Three with Lid	—
	X31-400003	Resection Guide Alliance	—
	31-555598	Resection Guide MIH Alliance	—
	31-555588	Hollow Chisel Attachment for Broach Handle	—
	31-400107 31-400108 31-400109 31-400110 31-400111 31-400112 31-400113 31-400114 31-400115 31-400116 31-400117	Exact Alliance RPP Broach Full	7 mm 8 mm 9 mm 10 mm 11 mm 12 mm 13 mm 14 mm 15 mm 16 mm 17 mm

Echo Femoral Hip System

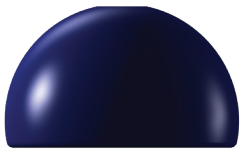
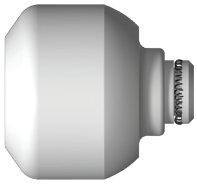
Instruments

Tray 3 (cont.)

Product	Part Number	Description	Size
	31-400307 31-400308 31-400309 31-400310 31-400311 31-400312 31-400313 31-400314 31-400315 31-400316 31-400317	Exact Alliance RPP Broach Partial	7 mm 8 mm 9 mm 10 mm 11 mm 12 mm 13 mm 14 mm 15 mm 16 mm 17 mm
	31-555500	Exact Broach Handle	—
	31-555501	Exact Anterior Supine Broach Handle	—
	31-473794	Exact Modular Calcar Planer	42 mm
	406661 406662 406663	Exact Blades	38 mm 42 mm 46 mm
	31-473795 31-473796 31-473797	Exact Rasp Style Blade	38 mm 42 mm 46 mm
	31-162401 31-162402 31-162403	Standard Offset RPP Non-collared Trunnion Trial	7–10 mm 11–14 mm 15–21 mm
	31-162413 31-162414 31-162415	Standard Offset RPP Collared Trunnion Trial	7–10 mm 11–14 mm 15–21 mm

Instruments (cont.)

Tray 4

Product	Part Number	Description	Size
—	595605	Plastic Tray with Lid	—
	31-401141 31-401142 31-401143 31-401144 31-401145 31-401146 31-401147 31-401148 31-401149 31-401150 31-401151 31-401152 31-401153 31-401154 31-401156 31-401158 31-401160	Endo/Bi-polar Trial Head	41 mm 42 mm 43 mm 44 mm 45 mm 46 mm 47 mm 48 mm 49 mm 50 mm 51 mm 52 mm 53 mm 54 mm 56 mm 58 mm 60 mm
	31-401166	Femoral Head Sizing Gauges	—
	31-401135 31-401134 31-401133 31-401132 31-401131 31-401136 31-401137	Modular Head Trial for Bi-polar	-6 mm -3 mm Standard +3 mm +6 mm +9 mm +12 mm
	31-401165 31-401164 31-401163 31-401162 31-401161	Modular Head Trial for Endo II	-6 mm -3 mm Standard +3 mm +6 mm

Echo Femoral Hip System

Instruments

Tray 4 (continued)

Product	Part Number	Description	Size
	31-165306 31-165308 31-165310 31-165316 31-165320 31-165326 31-165330 31-165340	Bi-polar Liner Removal Tool	41 mm 42 mm 43/45 mm 46/47 mm 48/50 mm 51/52 mm 53/57 mm 58/61 mm
	31-165341	Bi-Polar Liner Removal Dumbbell	—
	31-555611	Cinch Modular Handle	—
	31-401169	Cinch Endo/Bi-Polar II Trial Handle	—
	31-555618	Cinch Head Pusher/Impactor	—

Optional Instruments

Product	Part Number	Description	Size
	31-162416 31-162417 31-162418	Echo Lateralized Collared Trunnion Trial	7–10 mm 11–14 mm 15–21 mm
	31-162398 31-162399 31-162400	Echo Lateralized FFP Non-collared Trunnion Trial	7–10 mm 11–14 mm 15–21 mm

Notes

Notes

Zimmer Biomet does not practice medicine. The treating surgeon is responsible for determining the appropriate treatment, technique(s), and product(s) for each individual patient.

For complete information regarding indications, contraindications, precautions, warnings and sterilization, see the instructions for use packaged with the device, which can also be located under "Patient Risk Information" on www.zimmer-biomet.com.

Please check for local product clearances and reference product specific instructions for use.

ZIMMER BIOMET
Moving You Forward.™

Responsible Manufacturer
Biomet, Inc.
P.O. Box 587
56 E. Bell Drive
Warsaw, Indiana
46581-0587
USA

CE 2797

 • Form No. BMET0805.2 • Issue Date 2021-11-10

www.zimmerbiomet.com